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OMB No. 0704-0188

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1. REPORT DATE (DD-MM-YYYY)		2. REPORT TYPE Technical Papers		3. DATES COVERED (From - To)	
4. TITLE AND SUBTITLE <div>Please see attached</div>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER 1011	
				5e. TASK NUMBER CA9F	
				5f. WORK UNIT NUMBER 346161	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Air Force Research Laboratory (AFMC) AFRL/PRS 5 Pollux Drive Edwards AFB CA 93524-7048				8. PERFORMING ORGANIZATION REPORT	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Air Force Research Laboratory (AFMC) AFRL/PRS 5 Pollux Drive Edwards AFB CA 93524-7048				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S NUMBER(S) Please see attached	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
20030127 214					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT A	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Leilani Richardson
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER (include area code) (661) 275-5015

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

1011CA 9F

MEMORANDUM FOR PRS (In-House Contractor Publication)

FROM: PROI (STINFO)

17 Dec 2001

SUBJECT: Authorization for Release of Technical Information, Control Number: **AFRL-PR-ED-AB-2001-243**
Rusty Blanski; Justin Leland (ERC); Brent Viers; Shawn Phillips "Hybrid Inorganic-Organic
Performance Fluids Based on Polyhedral Oligomeric Silsesquioxanes (POSS)" **ABSTRACT ONLY**

Materials Research Society Meeting
(San Francisco, CA, 1-6 April 2002)

(Deadline: 31 Jan 2002)

(Statement A)

1. This request has been reviewed by the Foreign Disclosure Office for: a.) appropriateness of distribution statement, b.) military/national critical technology, c.) export controls or distribution restrictions, d.) appropriateness for release to a foreign nation, and e.) technical sensitivity and/or economic sensitivity.

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APPROVED/APPROVED AS AMENDED/DISAPPROVED

PHILIP A. KESSEL

Date

Technical Advisor

Space and Missile Propulsion Division

HYBRID INORGANIC-ORGANIC PERFORMANCE FLUIDS BASED ON POLYHEDRAL OLIGOMERIC SILSESQUIOXANES (POSS)

Rusty Blanski, Justin Leland, Brent Viers and Shawn H. Phillips

Performance fluids that operate at high temperature can be useful for many applications including highly efficient automobile engines and jet turbines. One challenging aspect to this project is to increase the use temperature of the performance fluid while maintaining low temperature pourability. One possible solution to this hurdle is to combine the high temperature stability of a silsesquioxane framework with the lubricity of hydrocarbons. Data will be presented on a wide variety of POSS alkyls were synthesized to test the various POSS frameworks for temperature stability and pourability at lower temperatures. Thermal and viscosity data will also be discussed.

DISTRIBUTION STATEMENT A

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